

**Notice of Allowability**

Application No.

10/053,079

Examiner

Hanh Nguyen

Applicant(s)

FLEISCHER ET AL.

Art Unit

2616

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendments filed on 12/20/06 and 2/9/07.
2. ☒ The allowed claim(s) is/are Claims 1-22 respectively.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other Attached Copy

HANH NGUYEN  
PRIMARY EXAMINER

### **EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Kevin Mason at (203) 255 6560 on 5/1/07.

The application has been amended as follows: Claims 1, 3, 6, 7, 21 and 22 have been amended to correct the 112 nd paragraphs and 101 issues as shown in the attached copy.

The following is an examiner's statement of reasons for allowance:

In claims 1, 8, 21 and 22, the prior art does not disclose adjusting link costs using an exponential function based on an amount of flow through links over which each demand is routed; and iterating the steps of routing, adjusting, and performing until an objective value is reached within a prescribed bound of a predetermined value, such that flow for each of the links in the network is determined.

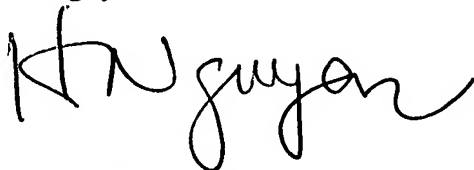
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Nguyen whose telephone number is 571 272 3092. The examiner can normally be reached on Monday-Friday 8:30 AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on 571 272 2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hanh Nguyen

A handwritten signature in black ink, appearing to read 'HNguyen', with a stylized, cursive script.

**HANH NGUYEN**  
**PRIMARY EXAMINER**

*Attached Copy*

1(Currently Amended) A method for determining routing in a network to achieve an objective value within a prescribed bound from its minimum value, the network comprising a plurality of nodes interconnected through links, the method comprising:

concurrently routing demands for each of a plurality of commodities on a set of paths having a minimum cost with respect to an iteratively changing cost function, each set of paths comprising at least one primary path and a secondary path, wherein each of the demands ~~will be~~ is routed from a primary path to a secondary path of the set during a failure;

adjusting link costs using an exponential function based on an amount of flow through links over which each demand is routed and based on said at least one primary path and said secondary path;

performing the step of adjusting for each of a number of potential failures; and

iterating the steps of routing, adjusting, and performing until an objective value is reached which is within a prescribed bound of a pre-determined value, such that flow for each of the links in the network is determined.

3. (Currently Amended) The method of claim 0, wherein:

the step of routing further comprises the step of routing a flow for one of the commodities on a set of paths having a minimum cost, the set of paths comprising at least one primary path and at least one secondary path, wherein the flow ~~will be~~ is routed from a primary path to a secondary path during a failure;

the step of adjusting further comprises the step of adjusting a minimum total cost using an exponential function based on an amount of flow through links over which the flow is routed; and

the method further comprises the step of iterating the steps of routing and adjusting until the demand for the commodity is routed.

6.(Currently Amended) The method of claim **Error! Reference source not found.**, wherein the objective value is a total expected cost of flow in the network over a predetermined time period, wherein the expected cost is taken over a probability distribution that includes the failures, and wherein the backup flow strategy is created wherein flows for any failure ~~will be~~ is recovered by routing the flows through secondary paths.

7.(Currently Amended) The method of claim 0, further comprising the step of computing a number of iterations after which the objective value ~~will be~~ is within a specified tolerance from an optimum objective value.

21.(Currently Amended) An apparatus for determining routing in a network to achieve an objective value within a prescribed bound from its minimum value, the network comprising a plurality of nodes interconnected through links, the apparatus comprising:

a memory that stores computer-readable code;

a processor operatively coupled to the memory, the processor configured to ~~implement~~ execute the computer-readable code, the computer-readable code configured to:

concurrently route demands for each of a plurality of commodities on a set of paths having a minimum cost with respect to an iteratively changing cost function, each set of paths comprising at least one primary path and a secondary path, wherein each of the demands ~~will be~~ is routed from a primary path to a secondary path of the set during a failure;

adjust link costs using an exponential function based on an amount of flow through links over which each demand is routed and based on said at least one primary path and said secondary path;

perform the step of adjusting for each of a number of potential failures; and

iterate the steps of routing, adjusting, and performing until an objective value is reached which is within a prescribed bound of a pre-determined value, such that flow for each of the links in the network is determined.

22.(Currently Amended) An article of manufacture for determining routing in a network to achieve an objective value within a prescribed bound from its minimum value, the network comprising a plurality of nodes interconnected through links, the article of manufacture comprising:

a computer-readable medium having computer-readable code ~~means~~ embodied thereon which when executed implement the steps of, the computer-readable code means comprising:

~~a step to~~ concurrently route routing demands for each of a plurality of commodities on a set of paths having a minimum cost with respect to an iteratively changing cost function, each set of paths comprising at least one primary path and a secondary path, wherein each of the demands ~~will be~~ is routed from a primary path to a secondary path of the set during a failure;

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~~a step to adjust~~ adjusting link costs using an exponential function based on an amount of flow through links over which each demand is routed and based on said at least one primary path and said secondary path;

~~a step to perform~~ performing the step of adjusting for each of a number of potential failures; and

~~a step to iterate~~ iterating the steps of routing, adjusting, and performing until an objective value is reached which is within a prescribed bound of a pre-determined value, such that flow for each of the links in the network is determined.